THE CLAIMS:

1. A nucleic acid molecule derived from: a gene encoding a transferase; or a gene encoding an enzyme for the transport or processing of a polysaccharide or oligosaccharide unit, including a *wzx* gene or a *wzy* gene, or a gene with a similar function; the gene being involved in the synthesis of a particular bacterial polysaccharide antigen, wherein the sequence of the nucleic acid molecule is specific to the particular bacterial polysaccharide antigen.

2. A nucleic acid molecule derived from: a gene encoding a transferase; or a gene encoding an enzyme for the transport or processing of a polysaccharide or oligosaccharide unit such as a *wzx* or *wzy* gene; the gene being involved in the synthesis of a particular bacterial O antigen, wherein the sequence of the nucleic acid molecule is specific to the particular bacterial O antigen.

3. A nucleic acid molecule derived from: a gene encoding a transferase; or a gene encoding an enzyme for the transport or processing of a polysaccharide or oligosaccharide unit such as a *wzx* or *wzy* gene; the gene being involved in the synthesis of an O antigen expressed by E. coli, wherein the sequence of the nucleic acid molecule is specific to the O antigen.

4. A nucleic acid molecule derived from a gene encoding a transferase; or a gene encoding an enzyme for the transport or processing of a polysaccharide or oligosaccharide unit such as a *wzx* or *wzy* gene; the gene being involved in the synthesis of an O antigen expressed by S. enterica, wherein the sequence of the nucleic acid molecule is specific to the O antigen.

5. A nucleic acid molecule according to any one of claims 1 to 4 wherein the nucleic acid molecule is

approximately 10 to 20 nucleotides in length.

6. A nucleic acid molecule derived from a gene, the gene being selected from a group consisting of the following sequences:
nucleotide position 739 to 1932 of SEQ ID NO:1;
nucleotide position 8646 to 9911 of SEQ ID NO:1;
nucleotide position 9901 to 10953 of SEQ ID NO:1;
nucleotide position 11821 to 12945 of SEQ ID NO:1;
nucleotide position 79 to 861 of SEQ ID NO:2;
nucleotide position 858 to 2042 of SEQ ID NO:2;
nucleotide position 2011 to 2757 of SEQ ID NO:2;
nucleotide position 2744 to 4135 of SEQ ID NO:2;
nucleotide position 5257 to 6471 of SEQ ID NO:2; and
nucleotide position 13156 to 13821 of SEQ ID NO:2;
which nucleic acid molecule is capable of hybridizing to complementary sequence from said gene.

7. A nucleic acid molecule which is any one of the oligonucleotides in Table 5 or 5A, with respect to the genes *wbdH*, *wzx*, *wzy* and *wbdM*.

8. A nucleic acid molecule which is any one of the oligonucleotides in Table 6 or 6A.

9. A nucleic acid molecule derived from a gene, the gene being selected from a group consisting of the following sequences:
nucleotide position 1019 to 2359 of SEQ ID NO:3;
nucleotide position 2352 to 3314 of SEQ ID NO:3;
nucleotide position 3361 to 3875 of SEQ ID NO:3;
nucleotide position 3977 to 5020 of SEQ ID NO:3;
nucleotide position 5114 to 6313 of SEQ ID NO:3;
nucleotide position 6313 to 7323 of SEQ ID NO:3;
nucleotide position 7310 to 8467 of SEQ ID NO:3;
nucleotide position 12762 to 14054 of SEQ ID NO:4; and
nucleotide position 14059 to 15060 of SEQ ID NO:4;
which nucleic acid molecule is capable of hybridizing to

complementary sequences from said gene.

10. A nucleic acid molecule which is any one of the oligonucleotides in Table 7.

11. A nucleic acid molecule which is any one of the oligonucleotides in Table 8 with respect to the genes *wzx* and *wbaV*.

12. A method of testing a sample for the presence of one or more bacterial polysaccharide antigens, the method comprising the following steps:
(a) contacting the sample with at least one oligonucleotide molecule capable of specifically hybridising to: (i) a gene encoding a transferase, or (ii) a gene encoding an enzyme for transport or processing of oligosaccharide or polysaccharide units, including a *wzx* or *wzy* gene; wherein said gene is involved in the synthesis of the bacterial polysaccharide antigen; under conditions suitable to permit the at least one oligonucleotide molecule to specifically hybridise to at least one such gene of any bacteria expressing the bacterial polysaccharide antigen present in the sample and
(b) detecting any specifically hybridised oligonucleotide molecules.

13. The method according to claim 12, the method further comprising contacting the sample with a further at least one oligonucleotide molecule capable of specifically hybridising to at least one sugar pathway gene under conditions suitable to permit the further at least one oligonucleotide molecule to specifically hybridise to at least one such sugar pathway gene of any bacteria expressing the bacterial polysaccharide antigen present in the sample and detecting any specifically hybridised oligonucleotide molecules.

14. A method of testing a sample for the presence

of one or more bacterial polysaccharide antigens, the method comprising the following steps:
(a) contacting the sample with at least one pair of oligonucleotide molecules, with at least one oligonucleotide molecule of the pair capable of specifically hybridising to: (i) a gene encoding a transferase, or (ii) a gene encoding an enzyme for transport or processing of oligosaccharide or polysaccharide units, including a *wzx* or *wzy* gene; wherein the gene is involved in the synthesis of the bacterial polysaccharide antigen; under conditions suitable to permit the at least one oligonucleotide molecule of the pair of molecules to specifically hybridise to at least such gene of any bacteria expressing the bacterial polysaccharide antigen present in the sample and
(b) detecting any specifically hybridised oligonucleotide molecules.

15. The method according to claim 14, the method further comprising contacting the sample with a further at least one pair of oligonucleotide molecules, with at least one oligonucleotide molecule of the pair capable of specifically hybridising to at least one sugar pathway gene under conditions suitable to permit the further at least one oligonucleotide molecule of the pair to specifically hybridise to at least one such sugar pathway gene of any bacteria expressing the bacterial polysaccharide antigen present in the sample and detecting any specifically hybridised oligonucleotide molecules.

16. A method of testing a sample for the presence of one or more bacterial O antigens, the method comprising the following steps:
(a) contacting the sample with at least one oligonucleotide molecule capable of specifically hybridising to: (i) a gene encoding an O antigen transferase, or (ii) a gene encoding an enzyme for transport or processing of the oligosaccharide or

polysaccharide units, including a *wzx* or *wzy* gene; wherein said gene is involved in the synthesis of the bacterial O antigen; under conditions suitable to permit the at least one oligonucleotide molecule to specifically hybridise to at least one such gene of any bacteria expressing the bacterial O antigen present in the sample and
(b) detecting any specifically hybridised oligonucleotide molecules.

17. The method according to claim 16, the method further comprising contacting the sample with a further at least one oligonucleotide molecule capable of specifically hybridising to at least one sugar pathway gene under conditions suitable to permit the further at least one oligonucleotide molecule to specifically hybridise to at least one such sugar pathway gene of any bacteria expressing the bacterial O antigen present in the sample and detecting any specifically hybridised oligonucleotide molecules.

18. The method according to claim 16 or 17 wherein the O antigen is expressed by E. coli or S. enterica.

19. The method according to claim 18 wherein the E. coli express the 0157 O antigen serotype or the 0111 O antigen serotype.

20. The method according to claim 18 wherein the S. enterica express the C2 or B O antigen serotype.

21. The method according to any one of claims 16 to 20 wherein the specifically hybridised oligonucleotide molecules are detected by Southern blot analysis.

22. A method of testing a sample for the presence of one or more bacterial O antigens, the method comprising the following steps:

(a) contacting the sample with at least one pair of oligonucleotide molecules, with at least one oligonucleotide molecule of the pair being capable of specifically hybridising to: (i) a gene encoding an O antigen transferase, or (ii) a gene encoding an enzyme for transport or processing of oligosaccharide or polysaccharide units, including a *wzx* or *wzy* gene; wherein the gene is involved in the synthesis of the bacterial O antigen; under conditions suitable to permit the at least one oligonucleotide molecule of the pair of molecules to specifically hybridise to at least one such gene of any bacteria expressing the bacterial O antigen present in the sample and

(b) detecting any specifically hybridised oligonucleotide molecules.

23. The method according to claim 22, the method further comprising contacting the sample with a further at least one pair of oligonucleotide molecules, with at least one oligonucleotide molecule of the pair capable of specifically hybridising to at least one sugar pathway gene under conditions suitable to permit the further at least one oligonucleotide molecule of the pair to specifically hybridise to at least one such sugar pathway gene of any bacteria expressing the bacterial O antigen present in the sample and detecting any specifically hybridised oligonucleotide molecules.

24. The method according to claim 22 or 23 wherein the O antigen is expressed by E. coli or S. enterica.

25. The method according to claim 24 wherein the E. coli are 0111 or the 0157 O antigen serotype.

26. The method according to claim 24 wherein the S. enterica express the C2 or B O antigen serotype.

27. The method according to ~~any one of claims 22 to 26~~ claim 22 wherein the method is performed according to the polymerase chain reaction method.

28. The method according to ~~any one of claims 22 to 26~~ claim 22 wherein the oligonucleotide molecules are selected from the group of nucleic acid molecules according to any one of claims 5 to 11.

29. A method for testing a food derived sample for the presence of one or more particular bacterial O antigens, the method being according to ~~any one of claims 16 to 28~~ claim 16 or 28.

30. A method for testing a faecal derived sample for the presence of one or more particular bacterial O antigens, the method being according to ~~any one of claims 16 to 28~~ claim 16 or 28.

31. A method for testing a sample derived from a patient for the presence of one or more particular bacterial O antigens, the method being according to ~~any one of claims 16 to 28~~ claim 16 or 28.

32. A kit comprising a first vial containing a first nucleic acid molecule capable of specifically hybridising to: (i) a gene encoding a transferase, or (ii) a gene encoding an enzyme for transport or processing oligosaccharide or polysaccharide units, including a *wzx* or *wzy* gene, wherein said gene is involved in the synthesis of a bacterial polysaccharide.

33. The kit according to claim 32 further comprising in the first vial, or in a second vial, a second nucleic acid molecule capable of specifically hybridising to: (i) a gene encoding a transferase, or (ii) a gene encoding an enzyme for transport or processing oligosaccharide or polysaccharide units, including a *wzx* or *wzy* gene, wherein

said gene is involved in the synthesis of a bacterial polysaccharide, and wherein the sequence of the second nucleic acid molecule is different from the sequence of the first nucleic acid molecule.

34. The kit according to claim 33 further comprising a nucleic acid molecule derived from a sugar pathway gene.

35. A kit according to claim 32 further comprising in the first vial, or in a second vial, a second nucleic acid molecule capable of specifically hybridising to a sugar pathway gene.

36. A kit according to any one of claims 32 to 35 wherein the nucleic acid molecules are approximately 10 to 20 nucleotides in length.

37. A kit comprising a first vial containing a first nucleic acid molecule capable of specifically hybridising to: (i) a gene encoding a transferase, or (ii) a gene encoding an enzyme for transport or processing oligosaccharide or polysaccharide units, including a *wzx* or *wzy* gene, wherein said gene is involved in the synthesis of a bacterial O antigen.

38. The kit according to claim 37, further comprising in the first vial, or in a second vial, a second nucleic acid molecule capable of specifically hybridising to: (i) a gene encoding a transferase, or (ii) a gene encoding an enzyme for transport or processing oligosaccharide or polysaccharide units, including a *wzx* or *wzy* gene, wherein said gene is involved in the synthesis of a bacterial O antigen, and wherein the sequence of the second nucleic acid molecule is different from the sequence of the first nucleic acid molecule.

39. A kit according to claim 37 further comprising in the first vial, or in a second vial, a second nucleic acid molecule capable of specifically hybridising to a

sugar pathway gene.

40. The kit according to claim 38 further comprising a nucleic acid molecule derived from a sugar pathway gene.

41. The kit according to any one of claims 37 to 40 wherein the nucleic acid molecules are approximately 10 to 20 nucleotides in length.

42. The kit according to any one of claims ~~31~~ 30 to 34 wherein the first and second nucleic acid molecules are according to any one of claims 5 to 11.